

## Section 3.2

# QUALITY ASSURANCE AND QUALITY CONTROL OF FIELD CONSTRUCTION OPERATIONS

### 3.2.1 Purpose

The purpose of this section is to explain the Quality Assurance (QA) and Quality Control (QC) process for construction operations. This section also addresses the procedures that construction inspectors use to perform their duties as the Department's representatives in the field.

### 3.2.2 Authority

Section 334.048, Florida Statutes

### 3.2.3 Definitions

**Contractor Quality Control:** A contract requirement that makes the Contractor responsible for material sampling and testing, inspection of the work, and maintaining associated records.

**Guidelist:** A list of major contract document requirements that inspectors are expected to verify without fail. A guidelist is not a comprehensive list of all contract document requirements.

**Quality Assurance:** The process for monitoring the Contractor's level of compliance with, and the effectiveness of the Quality Control Plan.

**Quality Control Plan (QCP):** A written plan developed by the Contractor and approved by the Department that details the qualified personnel, methods and materials that the Contractor intends to use to ensure that the work complies with the contract documents.

### 3.2.4 General

The Contract Documents set forth the requirements of the Contractor Quality Control program. Since the Contractor Quality Control specification requires the Contractor to be responsible for the Quality Control inspection of applicable materials, Construction

Engineering and Inspection (CEI) personnel do not have this responsibility as a primary function. Instead, CEI personnel have the primary function of monitoring the Contractor's level of compliance with the Quality Control Plan and evaluating the effectiveness of the Plan. In-person Quality Assurance inspections of work in progress are also required. These inspections should be selected on an as needed basis and are typically at a less frequent interval than Quality Control inspections.

Quality Control inspections of materials or inspection activities not covered by the Contractor Quality Control specification must be performed by CEI personnel.

### **3.2.5 Quality Assurance**

#### **3.2.5.1 General**

CEI personnel must determine how well the Contractor is following the Quality Control Plan and the effectiveness of the Plan. If the QCP is not being followed, this must be brought to the attention of the Quality Control Manager and the CEI Project Administrator (PA). Depending on the degree of noncompliance with the QCP, the PA will either approve the immediate adjustment of a minor QC lapse, or the PA will suspend work on the applicable part of the QCP until the Contractor revises it and receives re-approval from the PA. If the Contractor is following the QCP but the result is unacceptable quality then the inspector must notify the PA so the QCP can be revised. The inspector should always document instances of noncompliance with the QCP as well as instances where the QCP was followed but was not effective. This documentation must be kept in the Daily Work Report or Daily Report of Construction. These instances should also be discussed at work progress meetings and the PA should note QCP violations and failures in the Contractor's Past Performance Report.

#### **3.2.5.2 Performing Quality Assurance**

To perform effective Quality Assurance, CEI personnel must become familiar with the provisions and procedures of the approved QCP. CEI personnel must verify that the individuals identified in the QCP as responsible for Quality Control fulfill this responsibility and that their efforts minimize Quality Control lapses. If their efforts are not effective then this should be discussed with the Quality Control Manager and PA so that improvements are implemented in a timely manner. To determine if there are Quality Control lapses during construction operations, inspectors must perform in-person inspections on an as needed basis. Thought must be given as to which Contractor operations have had consistently good Quality Control and which operations have not. Operations that have not had good QC should be visited more often.

## **3.2.6 Quality Control**

### **3.2.6.1 General**

It is a construction inspector's responsibility to ensure compliance with the contract documents through direct observation of construction operations, examination of completed construction, sampling and testing of materials, and review of records to verify compliance with instructions for those records. It is also the inspector's responsibility to produce the required performance records. Performance of these responsibilities requires training, preparation, observation of field operations and record keeping.

### **3.2.6.2 Training Requirements**

Prior to performing an inspection, an inspector should have completed training related to the construction operation to be inspected. Classroom or self-study courses must be completed prior to being in direct charge of an inspection. The inspection of certain construction operations requires formal certification, such as pile driving and drill shaft inspection. Inspectors should receive field training sessions from a lead inspector, PA or other qualified instructor. The inspector should be able to observe a complete construction operation and its related inspection activities prior to being assigned to inspect that operation.

### **3.2.6.3 Preparation for Inspection**

#### **(1) Document Review**

Inspectors must be familiar with the contract documents. This requires studying and annotating the contract documents until a full understanding is achieved.

The following contract documents and others may require review:

- (1) Specifications (Standard specifications, special provisions and technical special provisions);
- (2) Plans and plan notes;
- (3) Design standards;

- (4) Contractor Quality Control Plans and Foundation Installation Plans
- (5) Material design mixes;
- (6) Job guide schedule for materials;
- (7) Material sampling procedures;
- (8) Quality Control Guidelists;
- (9) Safety Manuals; and
- (10) Basis of Estimates Manual.

## **(2) Planning**

A meeting, arranged and chaired by the Project Administrator referred to as a Pre-Operations Meeting, should be held between CEI staff, the Contractor and any relevant Subcontractors prior to the initial performance of any major construction activity. During this meeting, the Project Administrator should clearly establish lines of communication between project staff members, identify those in authority, and discuss issue escalation procedures.

As many CEI and Contractor personnel who will be involved in the activity as possible should attend the meeting. At the meeting, applicable specifications, plans and guidelists should be available for review. Applicable specifications should be reviewed and a “What If” discussion should take place regarding the Contractor’s plans to deal with unexpected issues during the operation. All inspectors who will be inspecting the operation should attend the Pre-operations Meeting. If they are unable to attend they should discuss the operation with the Project Administrator and the Lead Inspector prior to the operation.

### **3.2.6.4 Performance of Field Inspections**

#### **(1) Field Reference Documents**

The following documents must be available for reference by the inspector: ***Standard Specifications for Road and Bridge Construction, Design Standards***, all applicable

guidelists, plans sheets, sampling and testing logs, and material design mixes. Complete sets of these documents must be available in the field office.

## (2) Documenting the Inspection

Inspectors must record a variety of construction related information. For guidance about proper accuracy, see the ***Basis of Estimates Handbook*** which lists each pay item in the Contract Estimating System. For documentation requirements and for these records, see the ***CPAM Section 5.11 Final Estimates Documents***.

An inspector must record details of construction activities each day for all assigned construction activities into Site Manager. The computer record that results from the inspector's input is the "***The Daily Work Report***". For details about Site Manager and the requirements of The ***Daily Work Report***, see ***CPAM Section 5.1***. The information covered in the "***Contractor QC Lapses***" section that followings should be entered into the comments section of the form and into the "Remarks" section of the ***Daily Work Report*** under remarks category: QC Plan Compliance.

**Contractor QC Lapses:** The inspector must record lapses of the Contractor's QC effort, including failure to adhere to the approved QC Plan or failing of the Plan. These lapses are used in the computation of the Contractor's Past Performance Rating.